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EXAMINER

SEVER, ANDREW T

ART UNIT PAPER NUMBER

2851

DATE MAILED: 12/12/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/099,743

Applicant(s)

HUBEL ET AL.

Examiner

Andrew T Sever

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-28 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 March 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Drawings*

1. Figures 1-4 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). **A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application.** The objection to the drawings will not be held in abeyance.

### *Claim Rejections - 35 USC § 102*

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-4 and 6-9 are rejected under 35 U.S.C. 102(e) as being anticipated by Owen et al. (US 6,464,359).

The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention “by another,” or by an appropriate showing under 37 CFR 1.131.

Owen et al. teaches in figure 1 a system for optical projection of a complete image, using a light valve (110), a lenticular array (120) composed of lenticules positioned onto the light valve (110), and a filter (170) placed about a projection lens (140). Owen teaches in column 3 that the filter is aligned with the pixels of the lenticular array and since  $k$  section of the active color filter (170) map onto each group of  $k$  pixels of the image (pixels of the lenticular array) inherently the filter depends upon the shape of the lenticules in the lenticular array since any change in the shape of the lenticular array as acknowledged by the applicant would change the number of pixels in a group of the image as well as the general shape of the pixels themselves.

With respect to applicant's claim 2 and 3, Owens teaches in column 9 lines 60-62 that the lenticular array in one embodiment is to be made of lenticules of cylindrical shape and the pixels are caused to be rectangular in shape by the shape of the lenticules as is shown in figure 7 and claimed by applicant's claim 3.

With respect to applicant's claim 4, Owen teaches in figure 7, for example 710, that the filter is composed of a first, second and third segment, wherein the second segment carries red signals, the third carries green signals and the first segment carries blue signals. The segments are aligned to match the pattern of pixels of the lenticular array.

With regards to applicant's claims 6-9, in figure 5 Owen teaches a different embodiment that uses spherical lenticules which make the pixels inherently square as shown in part 510, 520, and 530 as is claimed by applicant's claim 7. (Owen does not specifically specify that this embodiment uses spherical instead of cylindrical, however Applicant acknowledges on page 18 and 19, that cylindrical lenticules are situated above groups of three adjacent pixels and form rectangular stripes as opposed to spherical ones which are situated above groups of four adjacent

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pixels that form a square. Since figure 5 of Owen clearly shows an image that is divided in four pixel sections and as has already been described each section corresponds to one lenticule, clearly the lenticules of figure 5's embodiment are spherical as opposed to the cylindrical in figure 7's embodiment.) The filter of this system is composed of four segments where the first segment carries blue signals, the second carries red signals, the third carries green signals, and the fourth carries a repeat of one of the three primary color signals as is shown with blue being the repeat in phase 3 (530) in figure 5 as is claimed by applicant's claim 8. In a different embodiment using spherical lenticules shown in figure 6 a white signal is used instead of the fourth segment carrying a repeat of one of the three primary colors as is claimed by applicant's claim 9.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Owen et al as applied to claims 1-4 and 6-9 above and further in view of Kingslake as provided by applicant.

As described in more detail above, Owen et al. Teaches in figure 1 a system for optical projection of a complete image, using a light valve (110), a lenticular array (120) composed of lenticules positioned onto the light valve (110), and a filter (170) placed about a projection lens

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(140). Owen teaches in column 3 that the filter is aligned with the pixels of the lenticular array and since  $k$  section of the active color filter (170) map onto each group of  $k$  pixels of the image (pixels of the lenticular array) inherently the filter depends upon the shape of the lenticules in the lenticular array since any change in the shape of the lenticular array as acknowledged by the applicant would change the number of pixels in a group of the image as well as the general shape of the pixels themselves.

Owen does not necessarily teach an embodiment wherein the first and third segment are equal in area and where the second segment is larger in area than the first or third segment. Figure 3 (a) of Kingslake teaches that the original Kodacolor arrangement of the filter bands at the lens aperture (projection lens) is designed such that the middle band is larger than the first and third bands. Although Kingslake shows green as the second segment instead of third segment as is claimed by the present applicant, since Owen teaches that the colors in Owen's filters electronically alternate in a different phases, the second segment would be red and the third segment would be green as is claimed by applicant. Since the Kodacolor arrangement is the older and classical design for arranging the color filters, it would have been obvious to one of ordinary skill in the art to arrange the filters of Owen in the manner taught by Kingslake which includes the second segment being larger in area while the first and third have equal areas.

6. Claim 10 rejected under 35 U.S.C. 103(a) as being unpatentable over Owen in view of Kingslake as applied to claim 5 above, and further in view of Takahashi et al. (US 6,398,365.)

As is described in more detail above Owen in view of Kingslake teaches a system for optical projection of a complete image that uses a light valve with a lenticular array disposed

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onto it, a filter that is place about the projection lens, where the filter is aligned with the pixels of the lenticular array and the filter depends upon the shape of the lenticules in the lenticular array. The lenticules are taught to be cylindrical in shape and composed of a first, second, and third segment which carry blue, red, and green signals respectively. Further the first and third segments are equal in area while the second segment is larger in area than the first or third segments.

Further Owen teaches figure 3 a projection system (300), which uses the filter, lenticular array, and light valve apparatus. The system has a lamp (310), a condenser (330) that is placed between the lamp (310) and the light valve (360) which as is taught in column 6 lines 7-25 of Owen et al causes the light from the lamp (310) to become spatially uniform, a light valve (360) is provided which has a transmitting lenticular array disposed upon it. An active color filter (340) is provided, which as is taught in column 6 lines 37-52 can be placed in the imaging aperture plane (the projection lens (360) is placed at the output of the filter), so that the projection lens (370) can focus the filtered light onto the output medium displaying a complete image.

Neither Owen nor Owen in view of Kingslake specifically teaches a field lens being placed between the light valve and the filter. This, however is well known in optical projection systems having lenticular arrays such as taught by Takahashi et al. (US 6,398,365) in figure 1, where field lens (which is a condenser lens 54) is taught in column 2 lines 31-34 to condense the light from the liquid-crystal display for projection via the projection lens. Since the field lens is needed to condense the light and is most likely present in the apparatus taught by Owen in view Kingslake to be the projection lens, it would be obvious to one of ordinary skill in the art at the

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time the invention was made to include a condenser lens as a field lens placed between the light valve and the filter.

7. Claims 11-14, 16-23 and 25-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Owen et al. as applied to claim 1-4 and 5-9 above, and further in view of Lee et al. (US 5,629,743)

Owen et al. teaches in figure 1 a system for optical projection of a complete image, using a light valve (110), a lenticular array (120) composed of lenticules positioned onto the light valve (110), and a filter (170) placed about a projection lens (140). Owen teaches in column 3 that the filter is aligned with the pixels of the lenticular array and since k section of the active color filter (170) map onto each group of k pixels of the image (pixels of the lenticular array) inherently the filter depends upon the shape of the lenticules in the lenticular array since any change in the shape of the lenticular array as acknowledged by the applicant would change the number of pixels in a group of the image as well as the general shape of the pixels themselves.

Owen et al. however does not teach that system functions to separate chrominance and luminance components of the complete image into separate images nor the use of first and second light valves. Lee et al. teaches in figure 8 an optical projection system, which uses two liquid crystal display panels (57 and 58) instead of the prior art single panel. The first panel display panel (58) process chrominance signals while the second (57) processes the luminance signal. Lee teaches in columns 1 and 2 that two panel projectors increase the brightness, contrast, and efficiency of the projected image, therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a second light valve in addition



to the light valve with the lenticular array built onto it (as is claimed by applicant's claim 20); so that one light valve can display the chrominance component and the other display the luminance component of the complete image separately in order to improve the image.

With respect to applicant's claims 12, 13, 21, and 22, Owens teaches in column 9 lines 60-62 that the lenticular array in one embodiment is to be made of lenticules of cylindrical shape and the pixels are caused to be rectangular in shape by the shape of the lenticules as is shown in figure 7 and claimed by applicant's claim 13 and 22.

With respect to applicant's claims 14 and 23, Owen teaches in figure 7, for example 710, that the filter is composed of a first, second and third segment, wherein the second segment carries red signals, the third carries green signals and the first segment carries blue signals. The segments are aligned to match the pattern of pixels of the lenticular array.

With regards to applicant's claims 16-19 and 25-28, in figure 5 Owen teaches a different embodiment that uses spherical lenticules which make the pixels inherently square as shown in part 510, 520, and 530 as is claimed by applicant's claims 17 and 26. (Owen does not specifically specify that this embodiment uses spherical instead of cylindrical, however Applicant acknowledges on page 18 and 19, that cylindrical lenticules are situated above groups of three adjacent pixels and form rectangular stripes as opposed to spherical ones which are situated above groups of four adjacent pixels that form a square. Since figure 5 of Owen clearly shows the light valve is divided in 4 pixel sections and as has already been described, each section corresponds to one lenticule, clearly the lenticules of figure 5's embodiment are spherical as opposed to the cylindrical in figure 7's embodiment.) The filter of this system is composed of four segments where the first segment carries blue signals, the second carries red signals, the third

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carries green signals, and the fourth carries a repeat of one of the three primary color signals as is shown with blue being the repeat in phase 3 (530) in figure 5 as is claimed by applicant's claims 18 and 27. In a different embodiment using spherical lenticules shown in figure 6 a white signal is used instead of the fourth segment carrying a repeat of one of the three primary colors as is claimed by applicant's claims 19 and 28.

8. Claims 15 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Owen in view of Lee as applied to claims 11-14, 16-23 and 25-28 above and further in view of Kingslake as provided by applicant.

As described in more detail above, Owen in view of Lee teaches a system for optical projection of a complete image, using two light valves (one for imaging the light with a chrominance signal and the second for imaging the light with a luminance signal), a lenticular array composed of lenticules positioned onto the first light valve, and a filter placed about a projection lens. Owen in view of Lee teaches that the filter is aligned with the pixels of the lenticular array and inherently the filter depends upon the shape of the lenticules in the lenticular array since any change in the shape of the lenticular array as acknowledged by the applicant would change the number of pixels in a group of the image as well as the general shape of the pixels themselves.

Owen in view of Lee does not necessarily teach an embodiment wherein the first and third segment are equal in area and where the second segment is larger in area than the first or third segment. Figure 3 (a) of Kingslake teaches that the original Kodacolor arrangement of the filter bands at the lens aperture (projection lens) is designed such that the middle band is larger

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then the first and third bands. Although Kingslake shows green as the second segment instead of third segment as is claimed by the present applicant, since Owen teaches that the colors in Owen's filters electronically alternate in a different phase the second segment would be red and the third segment would be green as is claimed by applicant. Since the Kodacolor arrangement is the older and classical design for arranging the colors filters, it would have been obvious to one of ordinary skill in the art to arrange the filters of Owen in view of Lee in the manner taught by Kingslake which includes the second segment being larger in area while the first and third have equal areas.

### ***Conclusion***

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

US 5,815,221 to Kojima et al. teaches a system for optical projection that includes two light valves one for the chrominance signal and one for the luminance signal. Kojima further teaches the use of filters over both light valves.

US 6,163,349 to Nakanishi et al. teaches the use of a lenticular array.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew T Sever whose telephone number is 703-305-4036. The examiner can normally be reached M-TH 8:30-18:30.

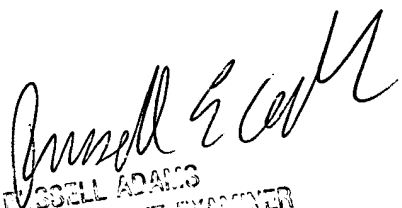
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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Russell Adams can be reached at 703-308-2847. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9318 for regular communications and 703-872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

AS  
December 9, 2002

  
RUSSELL ADAMS  
SUPERVISOR, PATENT EXAMINER  
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